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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,427	06/25/2003	Wen-Chien D. Hsiao	SJO920000097US1	6316

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EXAMINER	
RENNER, CRAIG A	

ART UNIT	PAPER NUMBER
2652	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/606,427	HSIAO ET AL.	
	Examiner	Art Unit	
	Craig A. Renner	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *9-13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-13* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *25 June 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-8, drawn to a "magnetic head", classified in class 360, subclass 126.

   II. Claims 9-13, drawn to a "method of fabricating a magnetic head", classified in class 29, subclass 603.01.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions of groups II and I are related as process of making and product made, respectively. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process, such as, a process not including "removing", for instance.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Lewis L. Nunnelly on 10 December 2004, a provisional election was made with traverse to prosecute the invention of group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

6. The drawings were received on 25 June 2003. These drawings are accepted.

Specification

7. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

8. The disclosure is objected to because of the following informalities:

a. In lines 3-4 on page 2, the reference to "US Patent 5,238,942" should be corrected as this patent is not directed to "pole piece structures".

b. In line 7 on page 9, "the inductive coil" should be corrected to read --The inductive coil--.

c. In line 6 of claim 1, "layer the" should be corrected to read --layer, the--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art FIGS. 2-3 and detailed description thereof.

Applicant's admitted prior art FIGS. 2-3 and detailed description thereof teaches a magnetic write head (50) comprising a first magnetic layer (54) having a first width (as shown in FIG. 3, for instance); a second magnetic layer (64) having a second width (W_{P2}); a non magnetic layer (58) separating at least a portion of the first magnetic layer from the second magnetic layer (as shown in FIGS. 2-3, for instance); a third magnetic layer (72) contacting the second magnetic layer (as shown in FIGS. 2-3, for instance), the third magnetic layer having a third width (W_{P3}) greater than the second width of the second magnetic layer (as shown in FIG. 3, for instance) [as per claim 1]; wherein the

magnetic head further comprises an electrically conductive coil (74), a portion of which passes between the first magnetic layer and the third magnetic layer (as shown in FIG. 2, for instance), the electrically conductive coil having a substantially planar first surface that is coplanar with a plane defined by an interface between the second magnetic layer and the third magnetic layer (as shown in FIG. 2, for instance) [as per claim 2]; wherein the magnetic head further comprises non-magnetic, electrically insulative material (includes 68 and 78, for instance) separating the electrically conductive coil from the first, second, and third magnetic layers (as shown in FIG. 2, for instance) [as per claim 3]; and wherein the first and second layers are magnetically connected with one another in a back gap region (66) [as per claim 4].

11. Claims 5 and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (US 5,652,687).

Chen teaches a magnetic head (FIGS. 20 and 22, for instance) comprising a magnetic write structure (200) having an ABS end (ABS) thereof, the magnetic write structure comprising a first magnetic layer (102) having a first pole (P1) at the ABS end thereof; a second magnetic layer having a second pole (P2T) at the ABS end thereof, the second pole being spaced apart from the first pole (as shown in FIG. 22, for instance) and having a second-pole width (as shown in FIG. 20, for instance); a third magnetic layer (104) having a third pole (P2) at the ABS end thereof, the third pole contacting the second pole (as shown in FIG. 22, for instance) and having a third-pole width greater than the second-pole width (as shown in FIG. 20, for instance) so that the

second magnetic layer and the third magnetic layer taken together have a T-shape when viewed from the ABS end (as shown in FIG. 20, for instance); and an inductive coil (110) disposed adjacent to and in registry with the third magnetic layer at a coil-registry location (immediately above 110) remote from the third pole (as shown in FIG. 22, for instance), the third magnetic layer passing through the inductive coil (as shown in FIG. 22, for instance), wherein the third magnetic layer is nonuniformly thick (as shown in FIG. 22, for instance) such that a thickness of the third pole is less than a thickness of the third magnetic layer at the coil-registry location (as shown in FIG. 22, for instance) [as per claim 5]; wherein the magnetic head further includes a gap insulator (G) disposed between the first pole and the second pole (as shown in FIG. 22, for instance) [as per claim 7]; and wherein the magnetic head further includes electrical insulation (includes I_1 and I_2, for instance) lying between the inductive coil and the adjacent first magnetic layer and third magnetic layer (as shown in FIG. 22, for instance) [as per claim 8].

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art FIGS. 2-3 and detailed description thereof in view of Matono et al. (US 2002/0030930).

Applicant's admitted prior art FIGS. 2-3 and detailed description thereof teaches a magnetic head (50) comprising a magnetic write structure having an ABS end (56) thereof, the magnetic write structure comprising a first magnetic layer (52) having a first pole (54) at the ABS end thereof; a second magnetic layer (60) having a second pole (64) at the ABS end thereof, the second pole being spaced apart from the first pole (as shown in FIGS. 2-3, for instance) and having a second-pole width (W_{P2}); a third magnetic layer (70) having a third pole (72) at the ABS end thereof, the third pole contacting the second pole (as shown in FIGS. 2-3, for instance) and having a third-pole width (W_{P3}) greater than the second-pole width (as shown in FIG. 3, for instance) so that the second magnetic layer and the third magnetic layer taken together have a T-shape when viewed from the ABS end (as shown in FIG. 3, for instance); and an inductive coil (74) disposed adjacent to and in registry with the third magnetic layer at a coil-registry location (76) remote from the third pole, the third magnetic layer passing through the inductive coil (as shown in FIG. 2, for instance) [as per claim 5]; wherein the inductive coil is substantially planar and lies in an inductive-coil plane (80); the first magnetic layer

is substantially planar and lies in a first-magnetic layer plane (82) parallel to and below the inductive-coil plane (as shown in FIG. 2, for instance), the second magnetic layer is substantially planar and lies in a second magnetic layer plane (84) parallel to and below the inductive coil plane (as shown in FIG. 2, for instance), the third magnetic layer is nonplanar (as shown in FIG. 2, for instance), with the third pole and a back gap layer portion (86) remote from the third pole both lying in a buried-portion plane (88) substantially coincident with the inductive-coil (as shown in FIG. 2, for instance), and a coil-registry portion (90) lying in a coil-registry portion plane (82) parallel to and above the inductive-coil plane (as shown in FIG. 2, for instance), and wherein the coil-registry location is within the coil registry portion of the third magnetic layer (as shown in FIG. 2, for instance) [as per claim 6]; wherein the magnetic head further includes a gap insulator (58) disposed between the first pole and the second pole (as shown in FIGS. 2-3, for instance) [as per claim 7]; and wherein the magnetic head further includes electrical insulation (includes 68 and 78, for instance) lying between the inductive coil and the adjacent first magnetic layer and third magnetic layer (as shown in FIG. 2, for instance) [as per claim 8]. Applicant's admitted prior art FIGS. 2-3 and detailed description thereof, however, remains silent as to "wherein the third magnetic layer is nonuniformly thick such that a thickness of the third pole is less than a thickness of the third magnetic layer at the coil-registry location."

Matono teaches a magnetic layer (13) being nonuniformly thick such that a thickness of a pole (13Ae) thereof is less than a thickness of the magnetic layer at a coil-registry location (directly above 11 within 13B) in the same field of endeavor for the

purpose of "preventing magnetic flux being saturated in the middle of the magnetic path and preventing data from being written and erased in regions where data is not suppose to be written, even at smaller track widths" (paragraph [0090], for instance). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the third magnetic layer of applicant's admitted prior art be nonuniformly thick such that a thickness of the third pole is less than a thickness of the third magnetic layer at the coil-registry location as taught/suggested by Matono. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the third magnetic layer of applicant's admitted prior art be nonuniformly thick such that a thickness of the third pole is less than a thickness of the third magnetic layer at the coil-registry location as taught/suggested by Matono since such prevents magnetic flux from being saturated in the middle of the magnetic path and prevents data from being written and erased in regions where data is not suppose to be written, even at smaller track widths.

Pertinent Prior Art

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Ju et al. (US 5,285,340), Shouji et al. (US 5,831,801), Huai et al. (US 5,966,800), Hiner et al. (US 6,032,353), Terunuma et al. (US 6,151,193), and Wu et al. (US 6,239,948), which each individually teaches a magnetic write head comprising a non-magnetic layer separating at least a portion of a first

magnetic layer from a second magnetic layer; and a third magnetic layer contacting the second magnetic layer and having a width greater than that of the second magnetic layer.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (703) 308-0559. The examiner can normally be reached on Tuesday-Friday 7:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Craig A. Renner
Primary Examiner
Art Unit 2652

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